Centre Number	Candidate Number

Candidate Name _____

EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level

Biology 5090/2

Paper 2 Theory

Wednesday **26 OCTOBER 2016**

Additional Information:
Answer Booklet

Time 1 hour 45 minutes

Instructions to Candidates

Write your name, centre number and candidate number in the spaces at the top of this page and on the **Answer Booklet** used.
There are **ten** questions in this paper.

Section A

Answer **all** questions.
Write your answers in the spaces provided on the question paper.

Section B

Answer any **three** questions.
Write your answers in the Answer Booklet provided.
At the end of the examination:

1 fasten the Answer Booklet used securely to the question paper,
2 enter the numbers of the Section B questions you have answered in the grid on the bottom right side corner.

Information for candidates

The number of marks is given in brackets [ ] at the end of each question or part question.
You are advised to spend no longer than one hour on Section A and no longer than 45 minutes on Section B.

Cell phones are not allowed in the examination room.

FOR EXAMINER'S USE	
Section A	
Section B	
Total	

Section A Short answer questions [44 marks]

Answer all the questions in the spaces provided on the question paper.

1 **Figure 1.1.** shows an animal cell as seen under an electron microscope.

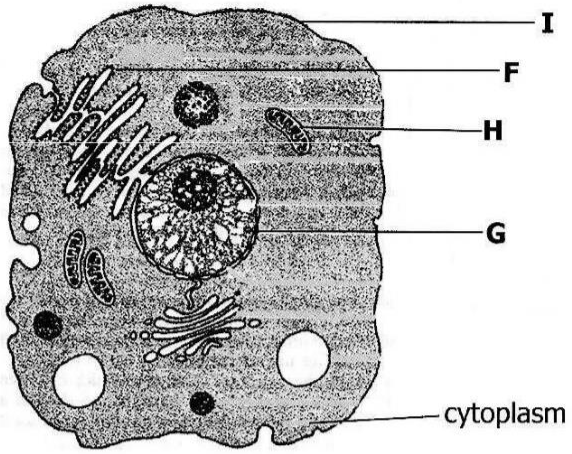

Figure 1.1

(a) Identify the labelled parts **F** and **G**.

Part **F** .....

Part **G** ..... [2]

(b) Explain the functions of the parts labelled **H** and **I**.

H .....

.....

I .....

..... [4]

(c) Suggest **two** cell parts which would be present in **Figure 1.1** if it was a plant cell.

1. .....

2. ..... [2]

Total 8 marks

2 **Figure 2.1.** shows the effect of pH on the rate of enzyme catalysed reactions **K** and **M**.

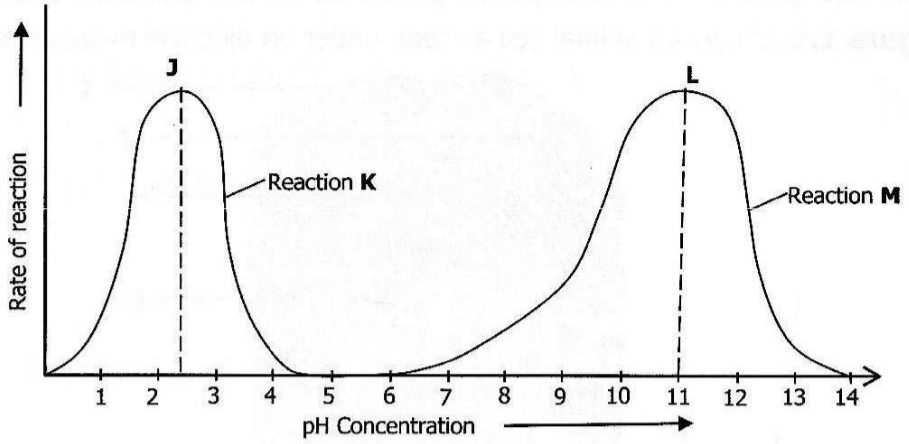

Figure 2.1

(a) What term is given to pH at **J** and **L**?

..... [1]

(b) Explain why the rate of reactions **K** and **M** goes down after point **J** and **L** respectively.

.....

..... [2]

(c) Name the regions of the alimentary canal where reactions **K** and **M** take place?

K.....

M..... [2]

(d) **(i)** Suggest **one** enzyme which can catalyse reaction **M**.

..... [1]

(ii) State **one** food nutrient which can be catalysed in reaction **K**.

..... [1]

(e) State **two** factors other than pH which affect enzyme activity.

1......

2...... [2]

Total 9 marks

3 **Figure 3.1.** shows a cross-section through a stem of a plant which had been previously dipped in a red dye for 6 hours.

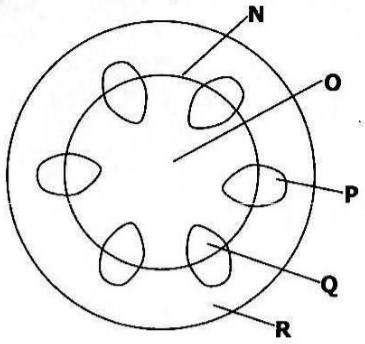

Figure 3.1

(a) **(i)** Identify the parts labelled **N**, **P** and **Q**.

N .....

P .....

Q ..... [3]

(ii) Which labelled part in **Figure 3.1** would be stained red?

..... [1]

(iii) Give a reason for your answer in **(a)(ii)** above.

.....

..... [1]

(b) **(i)** Suggest **three** factors that would increase the rate of movement of the dye in the stem when it is dipped in the red dye.

.....

.....

..... [3]

(ii) Name the process that will cause the movement of the red dye in the stem.

..... [1]

Total 9 marks

4 **Figure 4.1.** shows a certain type of flower.

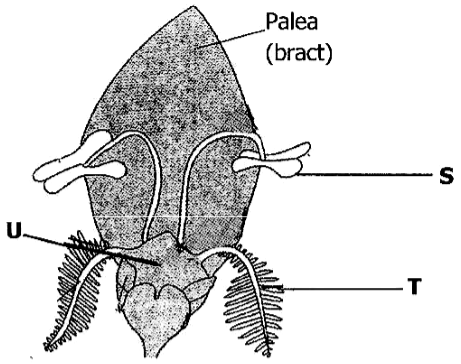

Figure 4.1

(a) Identify the parts labelled **S**, **T** and **U**.

S.....

T.....

U ..... [3]

(b) **(i)** Identify the type of pollination that occurs in the flower in **Figure 4.1**.

..... [1]

(ii) Give **two** features from **Figure 4.1** which support your answer in **(b)(i)** above.

.....

..... [2]

(c) **(i)** State **one** other type of pollination other than the one mentioned in **(b)(i)** above.

..... [1]

(ii) Give **two** characteristics of the flower where the type of pollination mentioned in **(c)(i)** above occurs.

1 .....

.....

2 .....

..... [2]

Total 9 marks

5 **Figure 5.1.** below shows pedigree diagrams for two families **A** and **B**, outlining inheritance of a sex-linked disease called haemophilia.

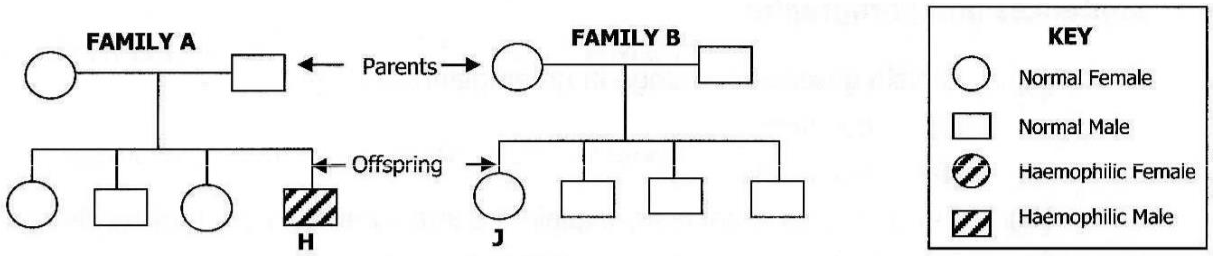

Figure 5.1

(a) **(i)** From **Figure 5.1**, which family has a parent who is a carrier for haemophilia?

..... [1]

(ii) Give a reason for your answer in **(a)(i)** above.

.....

..... [1]

(b) **(i)** Using the symbols $\mathbf{X^H}$ and $\mathbf{X^h}$, state the genotypes for offspring **H** and **J**, if **J** is a carrier for haemophilia.

H .....

J ..... [2]

(ii) Using a genetic diagram, show whether the offspring would be haemophilic or normal when **H** and **J** are crossed.

[5]

Total 9 marks

Section B Essay questions[36 marks]

Answer any three questions from this section. All answers must be in complete sentences and paragraphs.

6 **(a)** Explain gaseous exchange in green plants during:

(i) day time.

(ii) night time. [4]

(b) Using **named** organisms, explain the industrial application of respiration.[4]

(c) Describe how gum disease is brought about. [4]

Total 12 marks

7 **(a)** **(i)** Describe the structure and functions of endocrine glands. [3]

(ii) Explain the difference between the adrenal gland and the salivary gland. [3]

(b) Explain the function of the following hormones in the body:

(i) Insulin [3]

(ii) Antiduretic hormone (ADH) [3]

Total 12 marks

8 **(a)** Explain how HIV can be transmitted from one person to another. [6]

(b) **(i)** Explain the causes of stigma to people living with HIV and AIDS. [4]

(ii) Describe ways of reducing stigma. [2]

Total 12 marks

9 **(a)** State the parts of a synovial joint and explain their functions. [6]

(b) Explain why a bone is considered a living tissue. [3]

(c) Explain the action of antagonistic muscles of the eye when one moves from a dark room into bright light. [3]

Total 12 marks

10 **(a)** Describe factors that make soil fertile. [4]

(b) Explain the causes of loss of soil fertility. [4]

(c) Explain methods of improving and retaining soil fertility. [4]

Total 12 marks